

Molecular Characterization of *Dengue Virus* Type 1 and 2 Isolated During the 2005-2006 Dengue Outbreak in Brunei

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To date no fatality due to the severe form of dengue infection has ever been reported in Brunei. Statistics show that from 1994 to 2004, patients were found positive for dengue IgM antibodies and this indicates that there is dengue infection in the country. However, due to the lack of specialized laboratory facilities, the circulating serotypes were not known. Brunei is located on the north-east of the Borneo Island in Southeast Asia surrounded by the Malaysian states of Sabah and Sarawak. In 2005, Sabah and Sarawak reported 40 and 13 DHF cases respectively. This incident raised the importance of our study so that appropriate measures can be taken to prevent the risk of developing severe form of dengue in the country. Our preliminary study on dengue seroepidemiology in Brunei showed, from 2005 to 2006, DEN-2 was the predominant serotype followed by DEN-1. This study is the first to report the isolation and typing of dengue viruses isolated in Brunei and the extent of dengue infection in the country.

A total of three DEN-2 and two DEN-1 were full-length sequenced. From the phylogenetic analysis of the whole genome sequences, Brunei DEN-2 strains showed 96 to 99% and 98 to 99% homology at the nucleotide and amino acid level respectively between them. These strains showed 97 to 99% amino acid homology to DEN-2 strains from Indonesia isolated in 1998 & 2004, Australia isolated in 2001 and Taiwan and belong to the genotype IV of the DEN-2 classification. The DEN-1 strains between them showed 92% and 97% homology at the nucleotide and amino acid level respectively. One strain showed 96% homology at the amino acid level to the Nauru strain in the genotype IV while the other strain showed high homology to the strains from Singapore and Brazil in the genotype V of the DEN-1 classification.